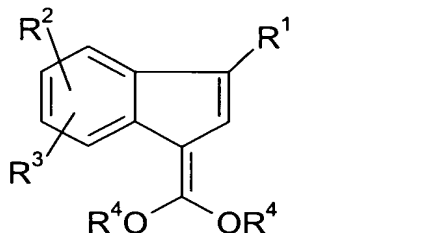
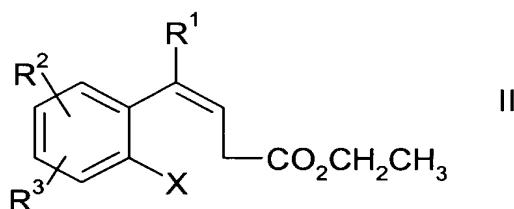


We claim

1. A improved process for preparing a compound of the formula



which comprises (a) conducting a solvent-free reaction between a compound of formula



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and a monohydric or dihydric alcohol in the presence of sulfuric acid; and

(b) treating the reaction product with a base and water to neutralize residual sulfuric acid;

wherein R¹ is an electron withdrawing group selected from the group consisting of cyano, alkoxycarboxyl, alkylcarbonyl, aryl, nitro, trifluoromethyl, and sulfonyl;

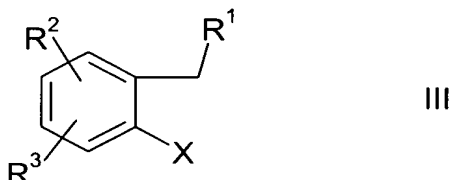
R² and R³ are selected independently from hydrogen, C₁-C₅ alkyl, C₁-C₅alkoxy, trifluoromethyl, halogen, sulfonyl alkyl, alkyamino, amide, ester, aryl-alkyl, hetero-alkyl and arly-alkoxy;

or R² and R³ together with the carbon atoms to which they are attached form a monocyclic or bicyclic ring;

and each R⁴ is independently C₁ to C₆ alkyl or two R⁴ groups together form a C₂ to C₃ alkylene bridge; and X is selected from the group consisting of chlorine, bromine, and iodine.

2. The process according to claim 1 wherein said alcohol is a monohydric alcohol of formula R⁴ OH wherein R⁴ is C₁ to C₆ alkyl or a dihydric alcohol wherein said dihydric alcohol is selected from the group consisting of ethylene glycol, 1,3, propylene glycol, and 1,2 propylene glycol.

3. The process according to claim 1 wherein said compound of formula II is prepared by (a) reacting a compound of formula III



with ethyl 3-ethoxyacrylate in the presence of a catalyst and an inert water miscible solvent and (b) completely removing said solvent upon completion of said reaction; wherein

R¹ is an electron withdrawing group selected from the group consisting of cyano, alkoxy-carboxyl, alkylcarbonyl, arylcarbonyl, aryl, nitro, trifluoromethyl, and sulfonyl; and X is selected from the group consisting of chlorine, bromine, and iodine; and

R² and R³ are selected independently from hydrogen, C₁ to C₅ alkyl, C₁ to C₅ alkoxy, trifluoromethyl, halogen, sulfonyl alkyl, alkyamino, amide, ester, aryl-alkyl, hetero-alkyl and aryl-alkoxy;

or R² and R³ together with carbon atoms to which they are attached form a monocyclic or bicyclic ring.

4. The process according to claim 3 wherein said catalyst is a mixture of palladium II acetate, tricyclohexylphosphine, and a base.

5. The process according to claim 3 wherein said solvent is removed by distillation.

6. The process according to claim 2 wherein said alcohol is a dihydric alcohol.

7. The process according to claim 6 wherein said dihydric alcohol is ethylene glycol.

8. The process of claim 3 wherein said inert water miscible solvent is selected from the group consisting of tetrahydrofuran, 2-methyltetrahydrofuran, and 1,2- dimethoxy ethane.

9. The process according to claim 8 wherein said inert water miscible organic solvent is tetrahydrofuran.

10. The process according to claim 1 wherein said base is ammonium hydroxide.

11. The process according to claim 1 wherein the compound of the formula I is 3-[1,3] dioxolan-2-yliden-3H-indene-1-carbonitrile.

12. The process according to claim 4 wherein said base is an alkoxide of a Group I metal.

13. The process according to claim 12, wherein said base is sodium t-butoxide.